Unusual Intercorony Artery Communication: A Case Report

Brett A. Hines, Peter W.T. Brandt, and Trevor M. Agnew
Departments of Radiology and Cardiology, Green Lane Hospital, Auckland, New Zealand

Abstract. The presence of a short, straight 1 mm calib-
er interarterial communication in the posterior atrio-
ventricular groove between the distal left circumflex
and right coronary arteries in a patient with otherwise
normal findings at left ventriculography and coronary
arteriography is documented, apparently for the first
time. It is suggested that the communication repre-
sents a posterior communicating coronary artery, a
normal congenital anatomical variation analogous to
the posterior communicating artery of the circle of
Willis. A second case with coronary arterial occlusive
disease could represent another example.

Key words: Coronary arteries – congenital, anatom-
ical, variations, abnormalities

Arterial anastomoses occur throughout the normal
human heart and, according to James [1], are com-
monly over 100 μm and sometimes several hundred
microns in diameter. Baroldi et al. [2] have described
intercoronary communications from 20 to 350 μm in
diameter in all normal hearts examined for this pur-
pose. In the presence of obstructive coronary artery
disease the demonstration of arterial collaterals up
to about 1 mm in diameter, but usually smaller, is
a common clinical experience. These collaterals are
characteristically tortuous and smaller than the arter-
ies they connect, making them readily identifiable.
Similar collaterals have been described in relation to
stenoses of possible congenital origin [3, 4].

Large caliber short or straight interarterial com-
 munications between the left circumflex and distal
right coronary arteries in the posterior atrio-ventricu-
lar (AV) groove have been observed [5, 6] in the

Address reprint requests to: Peter W.T. Brandt, M.D., Department
of Radiology, Green Lane Hospital, Auckland 3, New Zealand

presence of obstructive coronary arterial lesions, but
we are unaware of any documented description of
such communications in a case with otherwise normal
arteries and normal myocardium.

Our purpose is to present two cases showing such
large caliber short or straight communications in the
posterior AV groove, the first with otherwise normal
cardiovascular findings, the second with coronary ar-
terial obstructive lesions.

Case Reports

Case 1

A 43-year-old woman was referred to Green Lane Hospital on
December 12 1977, with a three-year history of central chest pain,
which did not radiate and did not last more than 20 minutes.
She had had several episodes of nocturnal pain. It was not relat-
ted to effort or stooping. Fatty meals occasionally resulted in epigastric
pain that radiated into the back. She did not smoke. Her general
practitioner had previously commenced Trinitrin, which relieved
the pain after 3–4 minutes. On a dose of Propranalol, 40 mg three
times a day, she thought the chest pain was less frequent.

On examination, she was mildly obese and normotensive
(blood pressure 130/90), and no carotid bruits nor cardiac murmurs
were heard. She had a normal resting electrocardiogram, but devel-
oped transitory left bundle branch block during an exercise test,
which was discontinued at 14 minutes on a gradient of 20 degrees
when she became tired and short of breath. She did not experience
chest pain. Serum lipids and glucose tolerance test were normal.
The chest x-ray was normal. The cardiologic opinion was that
her pain was not of cardiac origin. Coronary arteriography was
undertaken to exclude coronary artery disease.

At cardiac catheterization, the left ventricular contractility and
ejection fraction were normal. Coronary arteriography using the
Judkins technique showed a normal right coronary artery (RCA),
which supplied the posterior descending (posterior interventricular)
artery and provided several branches to the inferior left ventricular
surface. The left coronary artery (LCA) was also normal, and
the left circumflex artery extended to supply a branch to the left-
ward inferior, left ventricular surface. There was a good sized,
short interarterial connection approximately 1 mm in caliber in the
AV groove between the distal left circumflex artery near the
origin of its last branch and the distal RCA near the origin of
its last inferior surface branch (Fig. 1A and B). In a number of
Fig. 1A-D. Case 1. Cine frames from coronary arteriogram.

A and B. Left coronary injection in a left anterior oblique projection. Early (A) and late (B) frames show contrast filling the distal right coronary artery (rca) and inferior surface branches through a large caliber communication (posterior communicating artery – pc) in the left atrioventricular groove at the origin of a distal branch of left circumflex (lc) to the inferior left ventricular surface.

C and D. Right coronary injection in left anterior oblique (C) and right anterior oblique (D) projections. Contrast fills distal left circumflex especially in D having passed through the large communication from the distal right coronary artery; (om) obtuse marginal branch of left circumflex. (pd) posterior descending branch of rca.